Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Currently Amended) ~~The spot-size transformer in accordance with claim 3~~ A spot-size transformer, comprising:

a first optical waveguide having a first core and a first cladding covering substantially a whole surface of the first core, the first core having a surface region and an axis and the first cladding having an axis;

a second optical waveguide having a second cladding and a second core, the second core being an extension of the first cladding, wherein a center of the first core and a center of the second core are positioned substantially on a common axis; and

a transition region between the first and second optical waveguides, the transition region having an extension of the first core whose width becomes gradually narrower as it extends toward the second optical waveguide, wherein each of the first optical waveguide and the second optical waveguide is channel-type.

3. (Canceled)

4. (Currently Amended) ~~The spot-size transformer in accordance with claim 3~~ A spot-size transformer, comprising:

a first optical waveguide having a first core and a first cladding covering substantially a whole surface of the first core, the first core having a surface region and an axis and the first cladding having an axis;

a second optical waveguide having a second cladding and a second core, the second core being an extension of the first cladding, wherein a center of the first core and a center of the second core are positioned substantially on a common axis; and

a transition region between the first and second optical waveguides, the transition region having an extension of the first core whose width becomes gradually narrower as it extends toward the second optical waveguide, wherein the first cladding has at least a lower cladding positioned under the first core and an upper cladding positioned above the first core.

5. (Previously Presented) The spot-size transformer in accordance with claim 4, wherein a bottom of the first core is in contact with the lower cladding and a top surface and both sides of the first core are in contact with the upper cladding.

6. (Previously Presented) The spot-size transformer in accordance with claim 5, wherein an end face of the second core is substantially rectangular.

7. (Currently Amended) ~~The spot-size transformer in accordance with claim 3~~ A spot-size transformer, comprising:

a first optical waveguide having a first core and a first cladding covering substantially a whole surface of the first core, the first core having a surface region and an axis and the first cladding having an axis;

a second optical waveguide having a second cladding and a second core, the second core being an extension of the first cladding, wherein a center of the first core and a center of the second core are positioned substantially on a common axis; and

a transition region between the first and second optical waveguides, the transition region having an extension of the first core whose width becomes gradually narrower as it extends toward the second optical waveguide, wherein a section with the first cladding and a part constituting the second core that is an extension thereof substantially perpendicular to the axis of the first core are rectangular.

8. (Previously Presented) The spot-size transformer in accordance with claim 2, wherein a section with the first cladding and a part constituting the second core that is an extension thereof substantially perpendicular to the axis of the first core are rectangular.

9. (Currently Amended) ~~The spot-size transformer in accordance with claim 3~~ A spot-size transformer, comprising:

a first optical waveguide having a first core and a first cladding covering substantially a whole surface of the first core, the first core having a surface region and an axis and the first cladding having an axis;

a second optical waveguide having a second cladding and a second core, the second core being an extension of the first cladding, wherein a center of the first core and a center of the second core are positioned substantially on a common axis; and

a transition region between the first and second optical waveguides, the transition region having an extension of the first core whose width becomes narrower as it extends toward the second optical waveguide, wherein a section with the first cladding and a part constituting the second core that is an extension thereof substantially perpendicular to the axis of the first core are rectangular.

10. (Previously Presented) The spot-size transformer in accordance with claim 4, wherein a section with the first cladding and a part constituting the second core that is an extension thereof substantially perpendicular to the axis of the first core are rectangular.

11. (Previously Presented) The spot-size transformer in accordance with claim 5, wherein a section with the first cladding and a part constituting the second core that is an extension thereof substantially perpendicular to the axis of the first core are rectangular.

12. (Previously Presented) The spot-size transformer in accordance with claim 6, wherein a section with the first cladding and a part constituting the second core that is an extension thereof substantially perpendicular to the axis of the first core are rectangular.

13. (Previously Presented) The spot-size transformer in accordance with claim 12, wherein the first core has a shape obtained by omitting the extension of the first core whose width becomes gradually narrower.

14. (Original) The spot-size transformer in accordance with claim 13, wherein the second cladding is formed of a ladder silicone.

15. (Original) The spot-size transformer in accordance with claim 13, wherein the second cladding is formed of a silica glass.

16. (Original) The spot-size transformer in accordance with claim 15, wherein the second cladding is formed using a thin film process selected from a group consisting of a CVD process, a sputtering process, a vacuum deposition process, a FHD process and a sol-gel process.

17. (Previously Presented) A spot-size transformer, comprising:

a first optical waveguide having a first core and a first cladding covering the first core;

a second optical waveguide having a second core and a second cladding covering the second core, wherein a center of the first core and a center of the second core are positioned substantially on a common axis; and

a transition waveguide which is positioned between the first and the second optical waveguides;

wherein a light propagated into the first optical waveguide has a first optical field distribution;

wherein a light propagated into the second optical waveguide has a second optical field distribution;

wherein the transition waveguide changes from the first optical field to the second optical field gradually or changes from the second optical field to the first optical field gradually; and

wherein the second core covers the first core at least in a part corresponding to the transition waveguide and includes a region where a refractive index is changed by irradiating energy beam.

18. (Previously Presented) The spot-size transformer in accordance with claim 17, wherein a width of the part of the first core that corresponds to the transition waveguide becomes gradually narrower as it goes toward the second optical waveguide.

19. (Previously Presented) The spot-size transformer in accordance with claim 18, wherein a part of at least the first cladding is provided as an extension of the second core.

20. (Previously Presented) The spot-size transformer in accordance with claim 19, wherein the second cladding has a first part which comprises substantially non-doped silica glass and a second part which comprises silica glass containing at least germanium (Ge).

21. (Previously Presented) The spot-size transformer in accordance with claim 20, wherein the second part further contains a first element which reduces refractive index.

22. (Previously Presented) The spot-size transformer in accordance with claim 21, wherein refractive indexes of the first part and the second part are substantially equal.

23. (Previously Presented) The spot-size transformer in accordance with claim 22, wherein the first core comprises a material in which at least germanium (Ge), a first element and a second element which raise its refractive index are contained in silica glass.

24. (Previously Presented) The spot-size transformer in accordance with claim 23, wherein the first element is boron (B) and the second element is phosphorus (P).

25. (Previously Presented) The spot-size transformer in accordance with claim 24, wherein the first optical waveguide and the second optical waveguide are channel-type.

26-38. (Canceled)

39. (Previously Presented) A spot-size transformer, comprising:

a first optical waveguide having a first core and a first cladding covering the first core;

a second optical waveguide having a second core and a second cladding covering the second core, a part of at least the first cladding is provided as an extension of the second core, wherein a center of the first core and a center of the second core are positioned substantially on a common axis; and

a transition waveguide which is positioned between the first and the second optical waveguides, the transition waveguide having an extension of the first core whose width becomes gradually narrower as it extends toward the second optical waveguide;

wherein a light propagated into the first waveguide has a first optical field distribution;

wherein a light propagated into the second waveguide has a second optical field distribution;

wherein the transition waveguide changes from the first optical field to the second optical field gradually or changes from the second optical field to the first optical field gradually; and

wherein the second core covers the first core at least in a part corresponding to the transition waveguide and includes a region where a refractive index is changed by irradiating energy beam.